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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/660,054 | 09/11/2003 | Shigeru Yamane | MAT-8260US1 | 7291 |
| 23122 | 7590 | 03/02/2007 | EXAMINER | |
| RATNERPRESTIA | | | CROUSE, BRETT ALAN | |
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| VALLEY FORGE, PA 19482-0980 | | | PAPER NUMBER | |
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| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/660,054

Applicant(s)

YAMANE ET AL.

Examiner

Brett A. Crouse

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37, 40, 41, 44, 47, 59, 66, 69, 70, 73 and 76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 37, 40, 41, 44, 47, 59, 66, 69, 70, 73, and 76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 66, 69, 70, 73, and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by (Fushiki et al., US 4,572,859) hereinafter known as Fushiki as evidenced by (Paper on Web, <http://www.paperonweb.com/density.htm>)

Fushiki teaches:

Column 2, lines 33-64, with reference to figure 1 and figure 2, teach a clad or unclad metal laminate comprising a plurality of fibrous layer, wherein disposed between the fibrous layers are layers of resin. The passage further teaches that the material of layers 2, 3, and 4 may be the same as that of the matrix resin into which the cellulosic fibers are embedded. The passage further teaches that the plurality of fiber-resin layers can be clad with metal foil on one or both sides if desired.

Column 6, lines 19-29, teach a prepreg prepared by conventional techniques and a metal foil place upon the prepreg before curing.

Column 7, lines 1-18, teach the laminate can have holes.

Column 8, lines 1-34, example 2, teaches matching resins of the matrix and surface coating and the use of kraft paper as the fibrous sheet.

As to claim 69:

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<http://www.paperonweb.com/density.htm>) teaches the density of bleached kraft paper as 0.83 grams per cubic centimeter.

Applicant claims a fiber sheet density in the range of 700 to 1000 kilograms per cubic meter. This converts to 0.7 to 1.0 grams per cubic centimeter, thus bleached kraft paper meets the limitations of claim 69.

Claims 66, 70, 73, and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by (Yoshimitsu et al., US 5,120,384) hereinafter known as Yoshimitsu as evidenced by (Thermoplastic pultrusion of natural fibre reinforced composites, Van de Velde et al., Composite Structures, Volume 54, Issues 2-3, November-December 2001, pages 355-360).

Yoshimitsu teaches:

Column 7, lines 1-48, teach a non-woven glass fiber substrate impregnated with a binder resin. The binder resin can include epoxy and acrylic resins. The passage further teaches that the resin can additionally be deposited uniformly over the entirety of the impregnated glass fabric.

Column 8, lines 42-58, teach the glass fabric substrate further having a metal plate thereupon, with reference to figures 2 through 5, a plurality of metal plates can be present within the structure.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 37, 40, 41, and 44, are rejected under 35 U.S.C. 103(a) as being unpatentable over (Fushiki et al., US 4,572,859) hereinafter known as Fushiki as applied to claims 66, 69, 70, 73, and 76 above, and further in view of (Taneda et al., US 5,263,243) evidenced by (New types of polymer particles, Sigma-Aldrich, Analytix, May 2001).

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The teachings of Fushiki as in the rejections above are hereby incorporated by reference.

Fushiki teaches:

As to claims 41 and 44:

The structure of Fushiki having a melamine resin layer having a density of 1.51 grams per cubic centimeter as evidenced by (New types of polymer particles, Sigma-Aldrich, Analytix, May 2001, page 1). Viewing the resin layer as the first layer and the kraft paper layer as the second layer, the density of the first layer will be greater than the density of the second layer.

Fushiki does not teach:

Fushiki does not teach the use of a conductive paste to fill holes in the laminate.

Taneda teaches:

Column 6, line 66 through column 7, line 17, with reference to figure 20, teaches the use of a conductive paste to fill the via holes of a multilayer printed wiring board to provide electrical connections between the layers.

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the conductive paste of Taneda to provide electrical connection between the layers of the electrical laminate of Fushiki.

Claims 37, 40, 41, 44, 47 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Fushiki et al., US 4,572,859) hereinafter known as Fushiki as applied to claims 66, 69, 70, 73, and 76 above, and further in view of (Nakatani et al., US 6,096,411) hereinafter known as Nakatani.

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The teachings of Fushiki as in the rejections above are hereby incorporated by reference.

As to claim 47:

The structure of figure 2 in which a metal foil is disposed on both the top a bottom surface provides a structure encompassed by claim 47. A foil, fiber, fiber, foil structure which may or may not comprise additional elements meets the first layer, fiber layer, third layer, second layer, structure of claim 47 with associated differences in densities.

Fushiki does not teach:

Fushiki does not teach the use of a conductive paste to fill holes in the laminate.

Nakatani teaches:

Column 2, lines 33-67, teaches a conductive paste for filling inner via holes of a printed circuit board comprising a mixture of fine-grained copper particles and coarse grained insulating particles. The passage further teaches that it the paste provides low viscosity, low volatility, and high continuous printability.

Column 4, lines 34-35, teach the copper particles can be spherical or non-spherical in shape, for example flakes.

It would be obvious to one of ordinary skill in the art to incorporate a paste of Nakatani into the device of Fushiki in view of Nakatani to provide a paste having good conductivity and excellent processibility to interconnect layers of a printed wiring board.

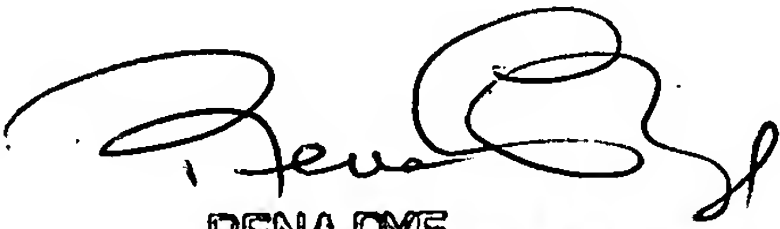
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is 571-272-6494. The examiner can normally be reached on Monday - Friday 6:00AM - 2:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BAC


RENA DYE
SUPERVISORY PATENT EXAMINER
AU 1774